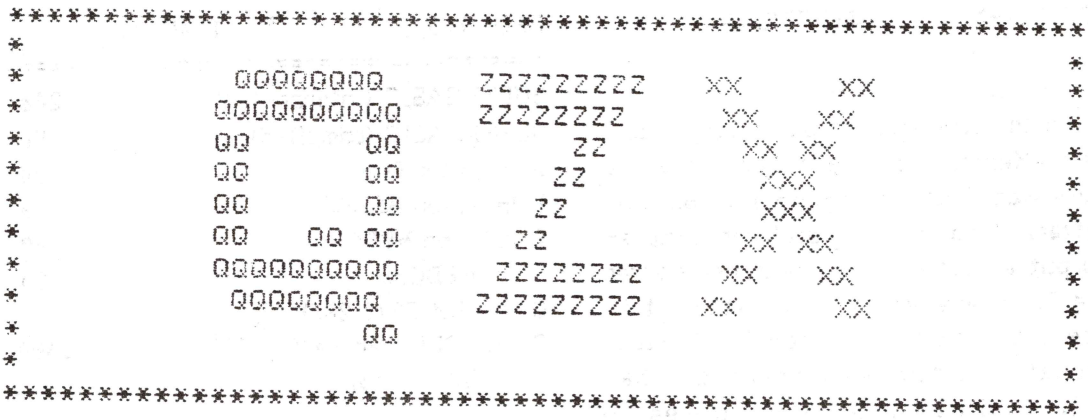

The Journal Covering Amateur Radio & Sinclair Computers
ZX80; Micro-Ace; ZX81; TS1000, 1500, & 2068; QL; Z88

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* EDITOR'S NOTES K5XY
* UNCLASSIFIED ADS
* QZX FRIENDS
* BITS AND BYTES
* LOW PASS FILTER WA3QLW
* A (HAPPY) ENDING K5XY
* FCC COMPUTER STANDARDS K5XY
* 2068 BLOCK GRAPHICS CHARACTERS

EDITOR'S NOTES

K5XY

By the time you can be reading this I will be in Mexico City. A number of years ago there was a flourishing Mexican Sinclair newsletter. I could not resist the temptation to put a picture from their newsletter on page 7. There was even an attempt to produce a Sinclair computer in Mexico. Unfortunately little was heard of that attempt. I will be looking for traces of Sinclair computers anywhere. However I do not think I will find much. I will really be opening a four month course on advanced nuclear electronics sponsored by the International Atomic Energy Agency, but I will be back in Las Cruces before the month is up.

I was very interested when I first learned that programs had been written to allow the QL to emulate a MSDOS machine because a large number of ham programs are written for that operating system. I recently came across some speed comparisons (in the CATS newsletter) which confirmed my impression that these emulation programs are in general too slow to be of much use. The comparison was not intended to be an in depth speed study, but they do not have to be. The test program was a computation intensive program to calculate all the prime numbers less than 32767 and greater than 29000. A program of this type does not place great (any) demands on the tape IO system of the QL so is a test of "computing speed". These figures are approximate and do not show the small variations which cam come from different operating speeds, different compilers, implementations of various languages, and different internal arrangements, but the trends are clear.

PROGRAM	TIME (s)
SUPERBASIC (interpreted)	240
SUPERBASIC (compiled)	50
FORTH (on QL)	20
FORTH (on MSDOS)	10
BASIC (on MSDOS)	60
C (on MSDOS)	30
C (on IBM PS/2 286)	50
C (on MSDOS emulating QL)	1600
C (on VAX 8650)	0.2

The postal rate increases have been announced. The cost of mailing QZX will go up 16%, most likely next month. Something will have to be done. It seems to me there are four choices as follows.

1. Increase the subscription rate
2. Decrease the frequency of issue
3. Decrease the size of each issue
4. Nothing

Of course one could combine several of these alternatives. My thoughts are as follows.

1. I just cannot do this. $15 is already a lot of money to pay for what you are getting.

2. This procedure by itself will accomplish nothing. Presumably each issue would be twice the size and hence take twice the postage for half the mailings. (And unless each issue were twice the size, the net result to the reader would be a doubling of the subscription rate.) Therefore no gain.

3. This procedure by itself would not reduce the amount spent on postage because QZX is already being sent for the minimum first class postage. However it would reduce the printing costs by just enough to offset the postage increase.

4. Actually this alternative is possible. A significant number of members have made an extra contribution to a postage fund. I have not had to contribute any personal funds to the operation of QZX, just time.

This time factor really is the most important one. The number of editorial contributions is quite low, partly because really new ham uses of Sinclair computers are hard to find. It also takes quite a bit of effort to put even a short program into a form which is understandable to a person who did not write it. The articles which do arrive often do not directly address the amateur radio uses of Sinclair computers or require quite a bit of effort on my part to make them more useful. Therefore my current thinking is to occasionally send out a six page issue rather than the current eight page issue.

If any readers have any comments on these thoughts, I will be glad to receive them.

I just received my February copy of MACUSER and, there in a quarter page full color ad, was the Sinclair (or rather Cambridge) Z88 for sale at $436 as an affordable portable for the Macintosh.

UNCLASSIFIED ADS

WANTED: UNCLASSIFIED ADS for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc.). Payment must be included with order. This is an excellent way to sell your program or unwanted equipment, ask for help, or find a specific program. Send your ad with payment to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: One TS1000 installed in "Kradle". Two Byte Back, one Sinclair, One Memopak 16K expanders. One Byte Back control module. One RS232 adapter board, nothing installed on it. $80.00 takes all. PO Box 111, Alma, IL 62807.

QZX FRIENDS

WA4BQE -- Ed did visit QZX in person shortly after Christmas. He got me caught up with the activities in Louisville and his collection of computers.

Also Don Melville, one of our Canadian readers, renewed and sent a generous contribution to the postage fund, more than making up for the higher costs of postage to Canada.

BITS AND BYTES

164 Use the following line to enter input from any position on the TS2068 screen.

```
INPUT AT 22,0; AT 10,0; "input value";a$
```

165 The following short program will permit you to copy the screen of the TS2068 to the printer without using the copy command.

```
1 FOR I=0 TO 21
2 FOR X=0 TO 31
3 LPRINT SCREEN$(I,X)
4 NEXT X
5 NEXT I
```

166 On the TS2068, OPEN #2 sends all data normally destined for the screen to the printer. CLOSE #2 cancels that command.

167 The following short program will allow the TS2068 to list characters not recognized by the SCREEN$ command.

```
1 LET C=2
2 FOR I=32 TO 255
3 PRINT AT 0,0,""
4 PRINT AT 0,0; CHAR$ I
5  IF CODE SCREEN$ (0,0)-0 THEN PRINT AT 4,C; CHR$ I: LET C=C+2
6 NEXT I
```

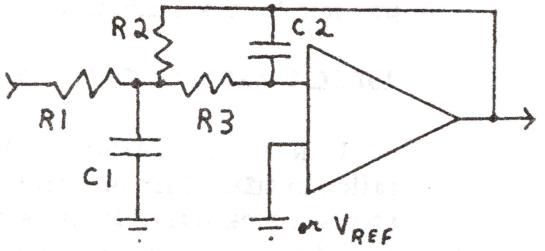
LOW PASS FILTER

WA3GLW

This program is the second of three which deal with the design of active filters. The three cases will help you design a high pass, a low pass, and a bandpass active filter. In each case there is an operational amplifier in the circuit. Just which one you use is not critical. It is also not critical at what voltage you run the amplifiers. However, if you do not want to change the circuits a bit, you should use a bipolar power supply (that is a power supply with equal + and - voltages). Anything between about 9 and 15 volts will do for the usual junk box op amp. Of course, if you have a specialized application such as a battery operated receiver, you will want to select your op amp carefully. Perhaps using a special low current, low voltage op amp.

The program will work, but perhaps not quite like you expect it to. There are some difficulties with the lines 200-250. See if you can get them into a form which gives you a result that you like. An article in this issue gives some ideas on how to modify these last lines.

```
10 PRINT "LOW PASS ACTIVE FILTER"
20 PRINT "THE STAGE GAIN SHOULD BE LESS THAN 10"
30 PRINT "ENTER STAGE GAIN"
40 INPUT H
45 PRINT H
50 PRINT "ENTER CUTOFF FREQ IN HZ"
60 INPUT F
65 PRINT F
70 PRINT "ENTER DAMPING COEFFICIENT. USE"
80 PRINT "0.707 FOR BUTTERWORTH OR FLAT FILTER"
90 INPUT Z
95 PRINT Z
100 PRINT "ENTER FEEDBACK CAP (C2) IN UF"
110 INPUT C2
115 PRINT C2
120 LET C2 = C2/1000000
130 LET R2 = Z/(2*PI*F*C2)
140 LET R3 = R2/(H+1)
150 LET R1 = R2/H
160 LET C1 = (1+H)*C2/Z
165 LET C1 = C1*1000000
170 PRINT "R1 = ";R1;" OHMS"
180 PRINT "R2 = ";R2;" OHMS"
185 PRINT "R3 = ";R3;" OHMS"
190 PRINT "C1 = ";C1;" UF"
200 PRINT "PRESS 1 TO CONTINUE"
210 IF INKEY$ = "" THEN GOTO 210
220 LET A$ = INKEY$
230 IF A$ = "1" THEN CLS
240 GOTO 10
250 IF A$ = "" THEN STOP
9998 SAVE LOw
9999 GOTO 10
```



A (HAPPY) ENDING

K5XY

Last month a program to help design a high pass active filter was printed. The ending of that program was as shown below.

```
200 PRINT "PRESS 1 TO CONTINUE"
210 IF INKEY$ = "" THEN GOTO 210
220 LET A$ = INKEY$
230 IF A$ = "1" THEN CLS
240 GOTO 10
250 IF A$ = "" THEN STOP
```

The general idea is that if you enter "1" you will go to the start of the program and be able to modify some of your parameters and recalculate the high pass filter. If you type something else you will stop. But that is not what the program says or does.

Let us look in detail at exactly what the program does say. In line 200 it says press 1 to continue. It gives you no other choice, thus you cannot complain if it does something else or even nothing else.

Consider line 210. That line has been discussed before in this series of articles. It is well written. As long as you do nothing, it does nothing (except repeat itself).

But, as soon as you put something in the keyboard, the IF part of line 210 becomes false, and the program goes to line 220 instead of back to 210. Line 220 just puts whatever you typed on the keyboard, whether a 1 or something else, into the string variable A$.

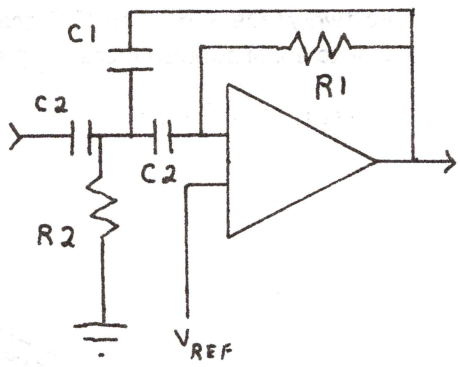
Line 230 acts as a switch. If A$ is one, the program goes to the last part of line 230 and clears the screen. The program then goes to line 240 which in turn causes line 10 to be executed. But look what happens if anything other than a 1 was in A$. The IF part of 230 is now false and the program goes directly to 240 (hence to 10) just the same. Only now the screen is not cleared and is something of a mess. The program never gets to line 250. It just does not stop (until you pull the plug).

The cure for this problem is fairly simple. First add a line to give the user a clear choice at line 200. Then change line 230 so the program acts on that choice. Try the following lines.

```
200 PRINT "PRESS 1 TO CONTINUE"
205 PRINT " ANYTHING ELSE TO STOP"
210 IF INKEY$ = "" THEN GOTO 210
220 LET A$ = INKEY$
230 IF NOT A$ = "1" THEN STOP
240 GOTO 10
```

There you have it, a happy ending for the high pass filter program. The same ending can be used for the lowpass program in this issue and for the next program in this series.

The circuit diagram that should have been placed at the end of the High Pass Filter article last month did not make that issue. It appears at the end of this article.



A circuit diagram for a high pass active filter. The specific values for the three capacitors and the two resistors can be calculated using the program "High Pass Filter" which appeared in the December (1990) issue of QZX.

FCC COMPUTER STANDARDS

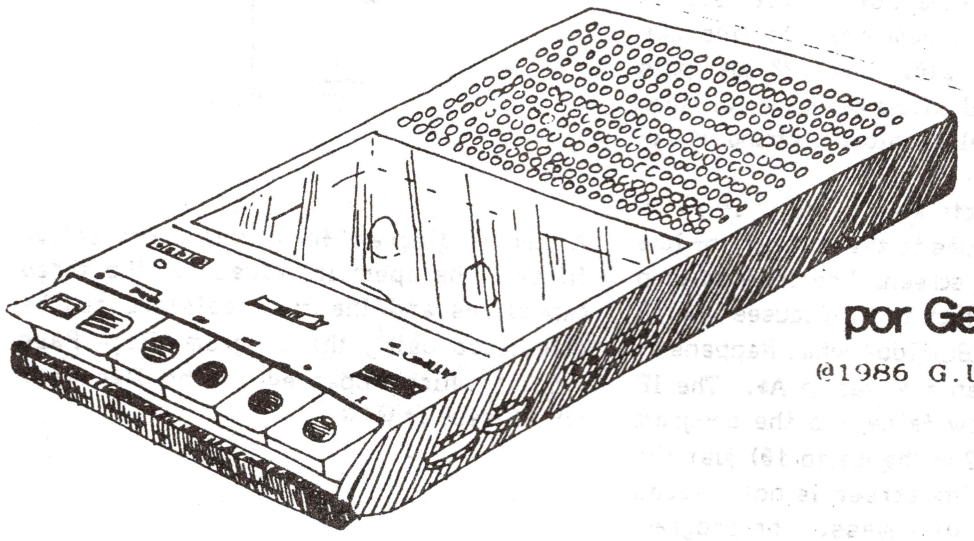
K5XY

Here are a few notes based on information which appeared in the Hacker, the newsletter of the Timex/Sinclair User Group of Las Vegas, where COMDEX, the main computer trade show was just held. It was reported that many computers are not meeting federal standards and thus could disrupt radio, television, and communications transmissions. So to see that the guidelines are met, the FCC had a booth set up at the COMDEX to make sure products complied with the relevant standards. The FCC were checking computers randomly at the show and found only 50 to 60 percent met its standards.

The FCC reported that it was not seeing a wave of disruptions, but were encountering some problems. For example, the FBI in San Diego had its system disrupted two years ago. The FCC traced the problem to a computerized cash register.

The computer industry just keeps growing and many people try to market computers very fast without going through the certification process. In fact, that process delayed the introduction into the United States of both the TS2068 and the QL. If you look at the QL circuit board you can see some of the changes which had to be made to the US model to permit it to meet the FCC requirements.

The FCC has two basic compliance standards. It requires a Class A standard for commercial computer systems. Smaller personal computers require a Class B certification which has more restrictive standards for RF emission because there is a greater potential for TVI in the home. If you do not think that there is RF coming from your computer, just put your two meter HT next to it when you turn it on. Fortunately my Sinclair computers put their spurious signals just above the two meter packet frequency.



por Germán Valero

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BLOCK GRAPHICS CHARACTERS

Here is a small table which lists the block graphics characters which are used with the T/S2068. You might find it useful to cut the table out and paste it on a piece of cardboard for a handy reference.

Block Graphics Characters

Character (■ = INK)	Key(s) #	Key(s) Caps Shift?	True Video · or Inv. Video?	CHR$ #
▗▖	8	NO	TRUE	128
▘▖	1	NO	TRUE	129
▚▖	2	NO	TRUE	130
▄▖	3	NO	TRUE	131
▐▖	4	NO	TRUE	132
▌▖	5	NO	TRUE	133
▞▖	6	NO	TRUE	134
▛▖	7	NO	TRUE	135
▛▗	7	YES	INV.	136
▞▗	6	YES	INV.	137
▌▗	5	YES	INV.	138
▐▗	4	YES	INV.	139
▄▗	3	YES	INV.	140
▚▗	2	YES	INV.	141
▘▗	1	YES	INV.	142
▀▗	8	YES	INV.	143

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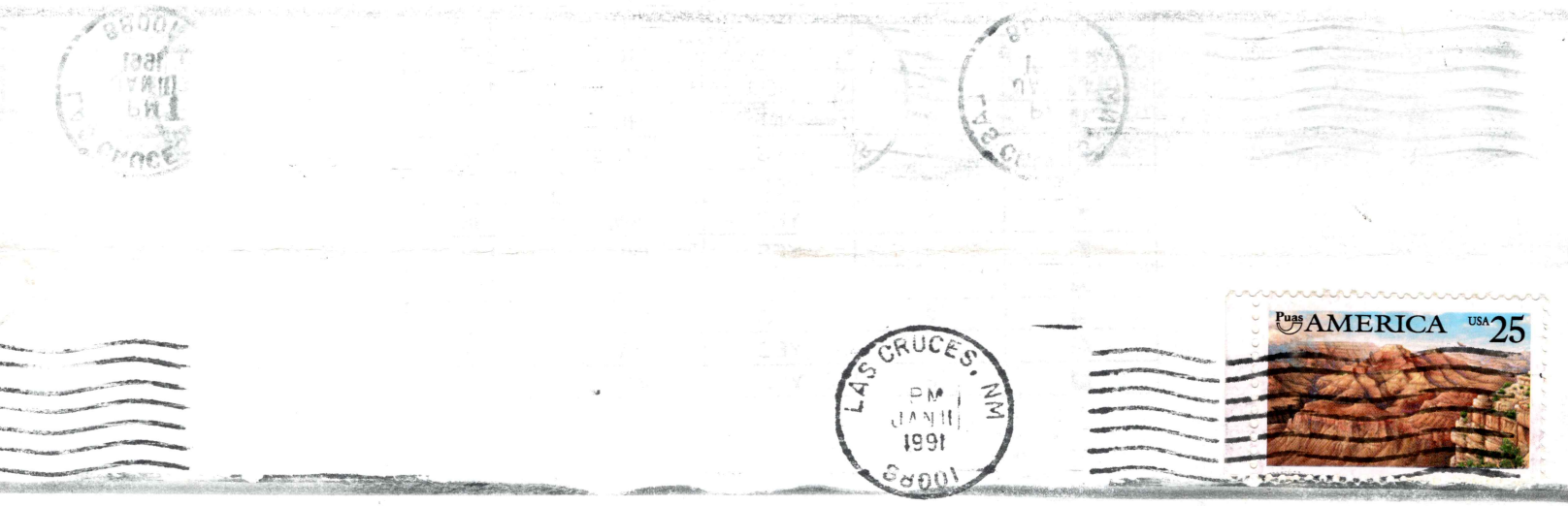
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